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PHOTOGRAPHIC INTERPRETATION REPORT

CHRONOLOGICAL DEVELOPMENT OF SOLID PROPELLANT ROCKET MOTOR TEST AND PROPELLANT PRODUCTION FACILITIES BIYSK, USSR

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DECEMBER 1966
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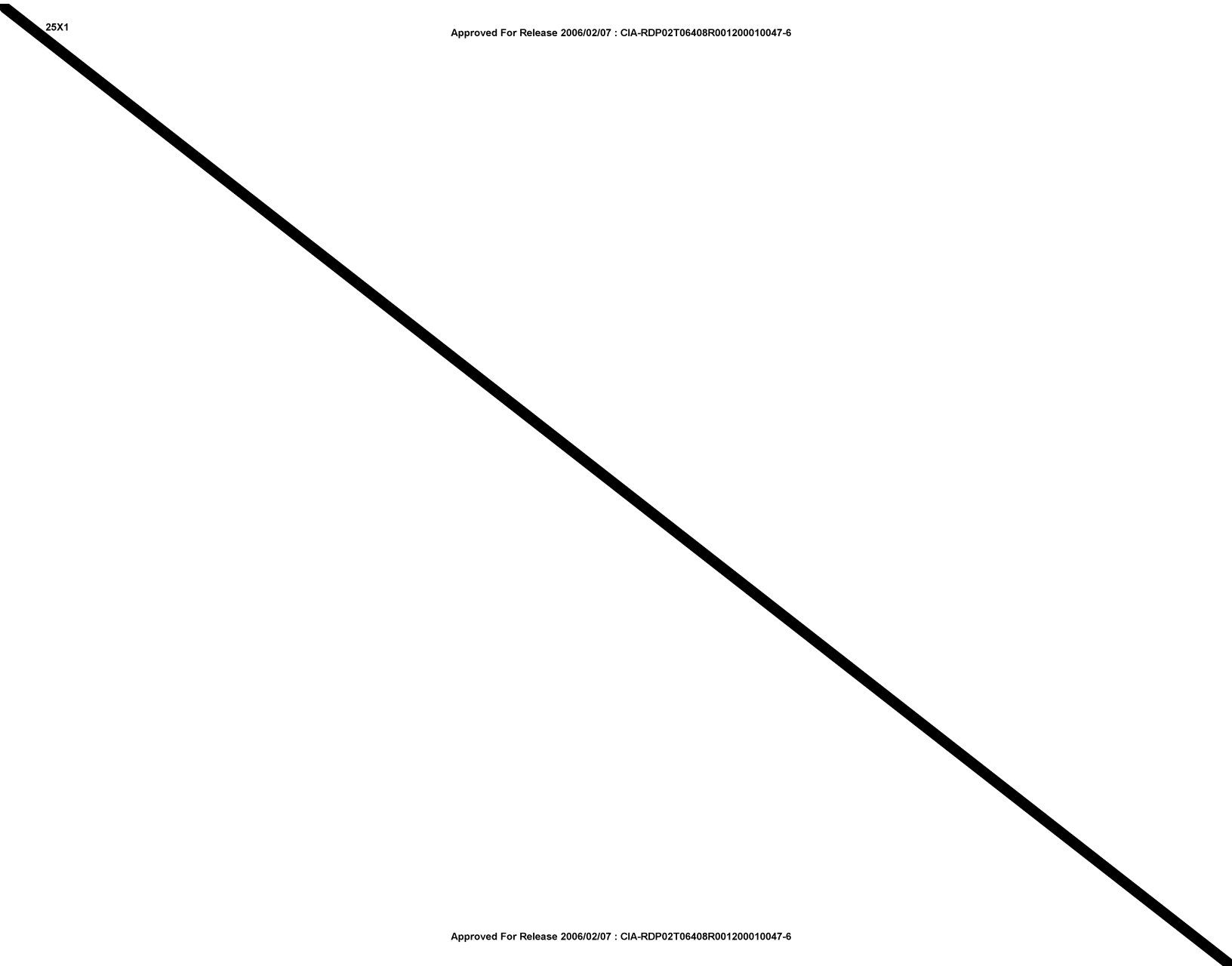

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NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

INTRODUCTION

The Biysk Solid Propellant Rocket Motor Test and Propellant Production Facilities are located approximately 5 nautical miles west-southwest of the highway bridge that crosses the Biya River (Figure 1). The geographic coordinates of the rocket motor test facility are approximately 52-29N 085-05E. The subject facilities (Figure 2) include a double-base propellant production plant (Figures 3 and 4), a separate but related probable solid propellant production/processing facility (Figures 5 and 6) hereinafter referred to as the modified solid propellant plant, the elaborate test facility (Figure 7 and 8), and an isolated test position (see Figures 7 and 8). The modified solid propellant plant may or may not be involved in double-base formulations, although more likely it is. The section of the complex annotated in Figure 2 as a probable high-explosives/industrial-explosives production area is not considered in detail in this report because it does not appear to be involved in the manufacture or processing of the types of explosives that are likely to be directly utilized as solid rocket propellants. It is possible, however, that this section of the complex could be involved in the manufacture of a solid oxidizer, such as ammonium perchlorate and other propellant components.

The chronological development of the complex is shown in Figures 4, 6, and 8, and building dimensions and other data are presented in Tables 1-3. Figures 9-11 are perspective views of the 2 test cells and the H-shaped checkout/assembly building at the test facility.

It should be kept in mind that there is no first-quality photographic coverage of the Biysk facilities. Dimensional data and distances are therefore approximate, and interpretations of functions are generalized. The [redacted] photography is the first fully usable coverage and furnishes the chronology base for the detailed drawings of the facilities of the complex. However, many structures were present on the earliest coverage, [redacted]

CHRONOLOGICAL DEVELOPMENT OF FACILITIES

The following text indicates, in general terms, the extent of development of the various elements of the complex prior to 1962, as well as developments of subsequent years not clearly evident in the figures or the tables.

1960

The [redacted] coverage of the Biysk facilities was of very poor quality. However, the following observations can be made from this photography:

The test facility may have been in the initial stages of construction, i.e., grading and excavation. There were probably no buildings present. The isolated test position had not yet been started. The double-base plant was under construction, with the north half apparently complete or nearly so; the northernmost double base line was possibly complete. Very few buildings were present in the south half of the plant area. The modified solid propellant plant was in the early phase of construction; a few revetments, some of which may have contained buildings, were present. The probable high-explosives/industrial-explosives plant was in the early stages of construction; a few buildings, some of which were revetted, were present.

The above observations, although based on the analysis of very poor photographic coverage, tend to indicate that the principal elements of the Biysk complex may have been essentially contemporaneous in starting times and rates of construction. It appears probable, however, that some production and test elements of the complex had an operational capability considerably prior to the completion of the complex as a whole. It is also possible that part of the double-base plant antedates 1960 and was producing conventional propellants prior to that time.

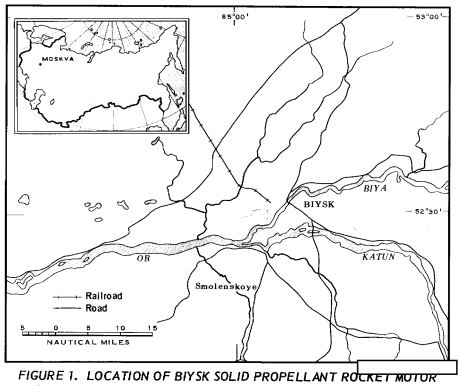


FIGURE 1. LOCATION OF BIYSK SOLID PROPELLANT ROCKET MOTOR TEST AND PROPELLANT PRODUCTION FACILITIES.

1961

The subject facilities were again covered by very poor-quality photography [redacted] from which the following observations can be made:

The test facility was in the early stages of construction, with a few buildings probably present. The isolated test position was not started. At the double-base plant considerable progress since [redacted] had been made in the construction of new buildings. The south double-base line was present. The plant as a whole was probably 70 to 80 percent complete in terms of the number of buildings present. At the modified solid propellant plant considerable progress in the construction of new buildings was evident, but the plant as a whole was probably less than half finished by the end of the year. At the probable high-explosives/industrial-explosives plant, significant progress had been made in the construction of new buildings. The explosives storage area was not yet started.

Because of the very poor quality of the 1960 and 1961 coverages, the information derived from them should be considered as probabilities.

1962

The first fully usable photographic coverage of the Biysk complex was obtained in [redacted] in [redacted] of that year is the primary source of the data in Figures 4, 6, and 8. Reference to these figures and to Tables 1, 2, and 3 will indicate the approximate construction status of the facilities of the complex at that time. The probable sensitive-components storage facility at the west end of the test facility was under construction in 1962; the degree of completion cannot be determined.

1963

In 1963 the Biysk complex was covered by only 1 mission, in [redacted] Most of the facilities were obscured by clouds, but some information relative to the test facility and the isolated test position was available (see Figures 4, 6, and 8 and Tables 1-3).

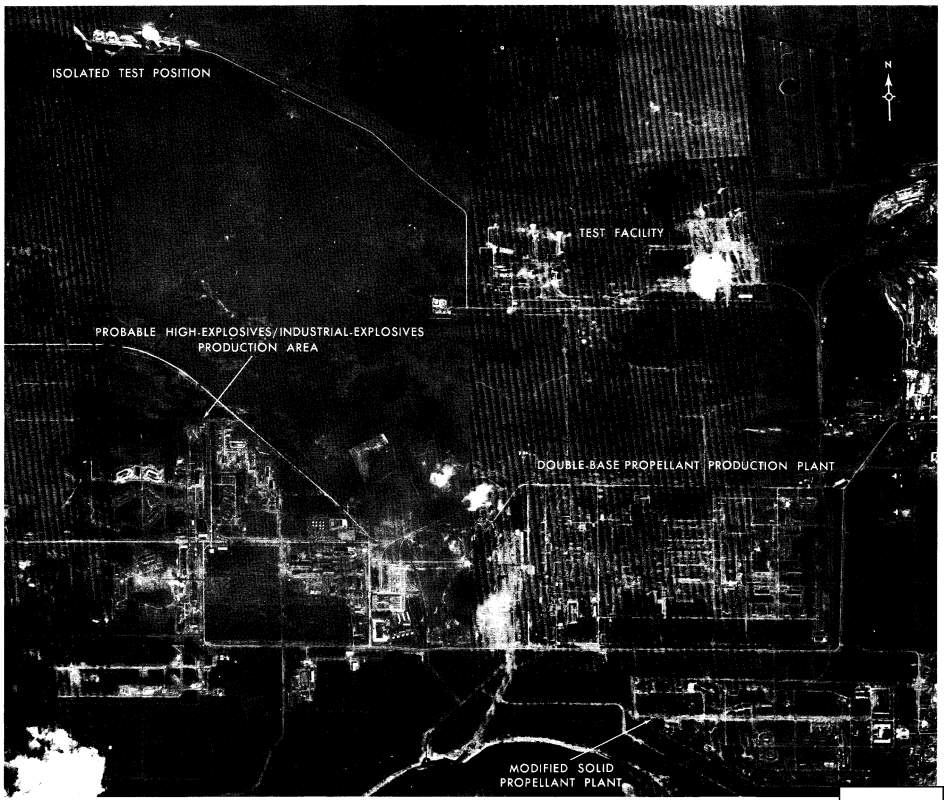


FIGURE 2. SOLID PROPELLANT ROCKET MOTOR TEST AND PROPELLANT PRODUCTION FACILITIES.

25X1

1964 THROUGH

At the isolated test position, the 2 westernmost unoccupied revetments west of the position were apparently complete by . The third had been started by that date and was still under construction in as was the wall system that will secure the area occupied by these revetments. Two additional areas of construction activity at the test position were evident on the photography (see Figure 7). On photography of dark discoloration of snow-covered terrain opposite the test position provided evidence of a then-recent firing. (For the status of the other facilities, see Figures 4, 6, and 8 and Tables 1-3.)

ESTIMATED DATES OF OPERATIONAL STATUS OF FACILITIES

The following statements concerning dates of operational status for major elements of the Biysk facilities are strictly estimates, based on an analysis of all the photographic coverage of the facilities, and should be used with due caution.

DOUBLE-BASE PLANT

A limited double-base production capability could have existed as early as at which time the structures comprising the northernmost double-base production line were present. However, in view of the fact that no test facilities were available until mid-to-late 1962, it would appear that even a limited double-base capability, in terms of rocket motor propellants, did not exist until then. In view of the subsequent construction in the plant, it appears probable that it did not achieve full production capability until considerably later.

MODIFIED SOLID PROPELLANT PLANT

In terms of flow pattern and type of propellant produced, this plant remains an enigma. A very similar plant is located at the Perm Rocket Motor Test and Production Facility. The Biysk plant contains buildings which can be interpreted as administration/laboratory/engineering structures (items 75, 76, and 78, Figure 6), a considerable number of revetted structures, and a group of offset buildings similar to those found in the east end of the Biysk test facility. Of the revetted structures, at least 1 and possibly more can be reasonably interpreted to be casting facilities. Item 29 in Figure 6 is the largest of these structures, with a high section on top of the main building. The height of the building and the presence of heavy revetting suggest that it may be a casting facility for large motors. It is probably rail served, as are other revetted propellant handling facilities in the plant.

TEST FACILITY

Most of the structures in the west half of the test facility were apparently complete by the end of 1962.

However, none of the buildings interpreted as possible temperature conditioning structures had yet been started. It is conceivable that a limited test capability existed by the end of 1962, but it appears probable that the facility as a whole did not become operational until 1964 or possibly later. The limited testing required by the early, possibly pilot-scale production of the double-base and solid propellant plants may have been carried out at the isolated test position. If the assumption is made that part or all of the early solid propellant production capability of the double-base plant is or was used for the manufacture of small, tactical-type rockets, the small shell-testing range located at the extreme west end of the test facility would have sufficed for quality-control testing. This range was apparently complete in [redacted] Steamlines serving the possible temperature conditioning facilities and other structures in the east end of the test facility were in the early stages of construction in [redacted] Steamline service to the test positions and their supporting facilities was probably complete by that date. Steamlines to the possible temperature conditioning facilities were probably completed between [redacted] segments of trenching were still open in some areas on the [redacted] coverage. Steamlines to the 4 large storage buildings immediately west of the temperature conditioning structures were probably incomplete as of [redacted]

ISOLATED TEST POSITION

This facility was apparently operational by [redacted] although it has been added to since. Photography of that date shows in an otherwise cloudless sky a roughly circular probable smoke cloud not far from the test position. The cloud was estimated to be about 2,200 feet in diameter and had drifted about 4,400 feet from the test position. On the same photography a possible burn mark is visible on the bank opposite the test position.

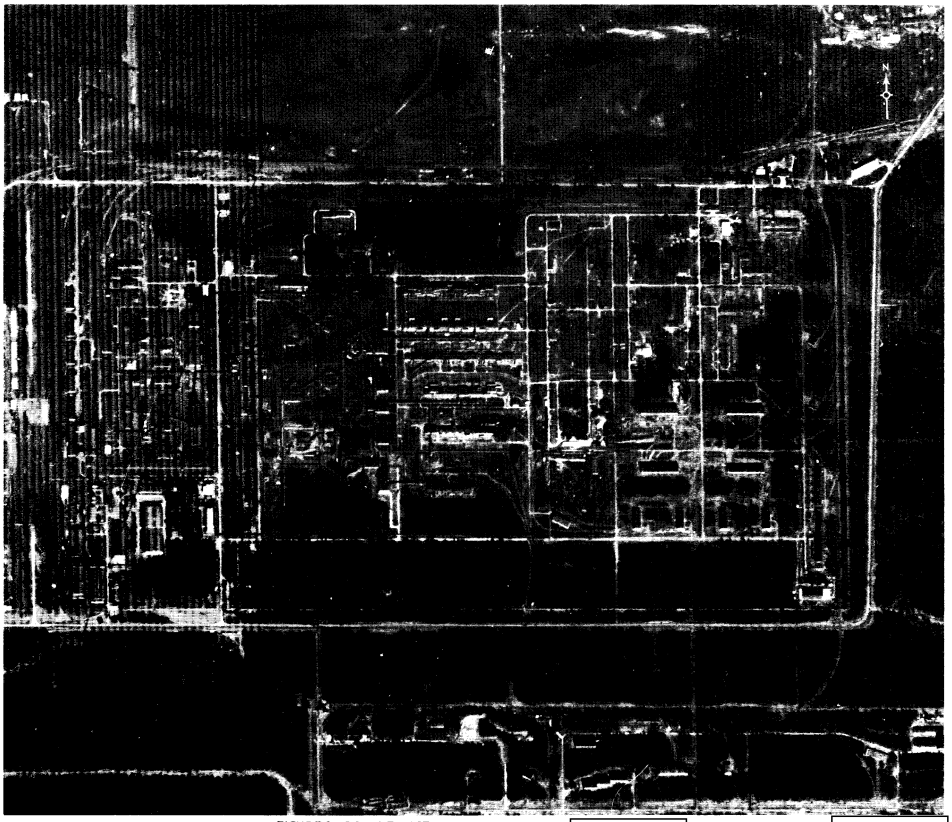


FIGURE 3. DOUBLE-BASE PROPELLANT PLANT, [redacted] 25X1

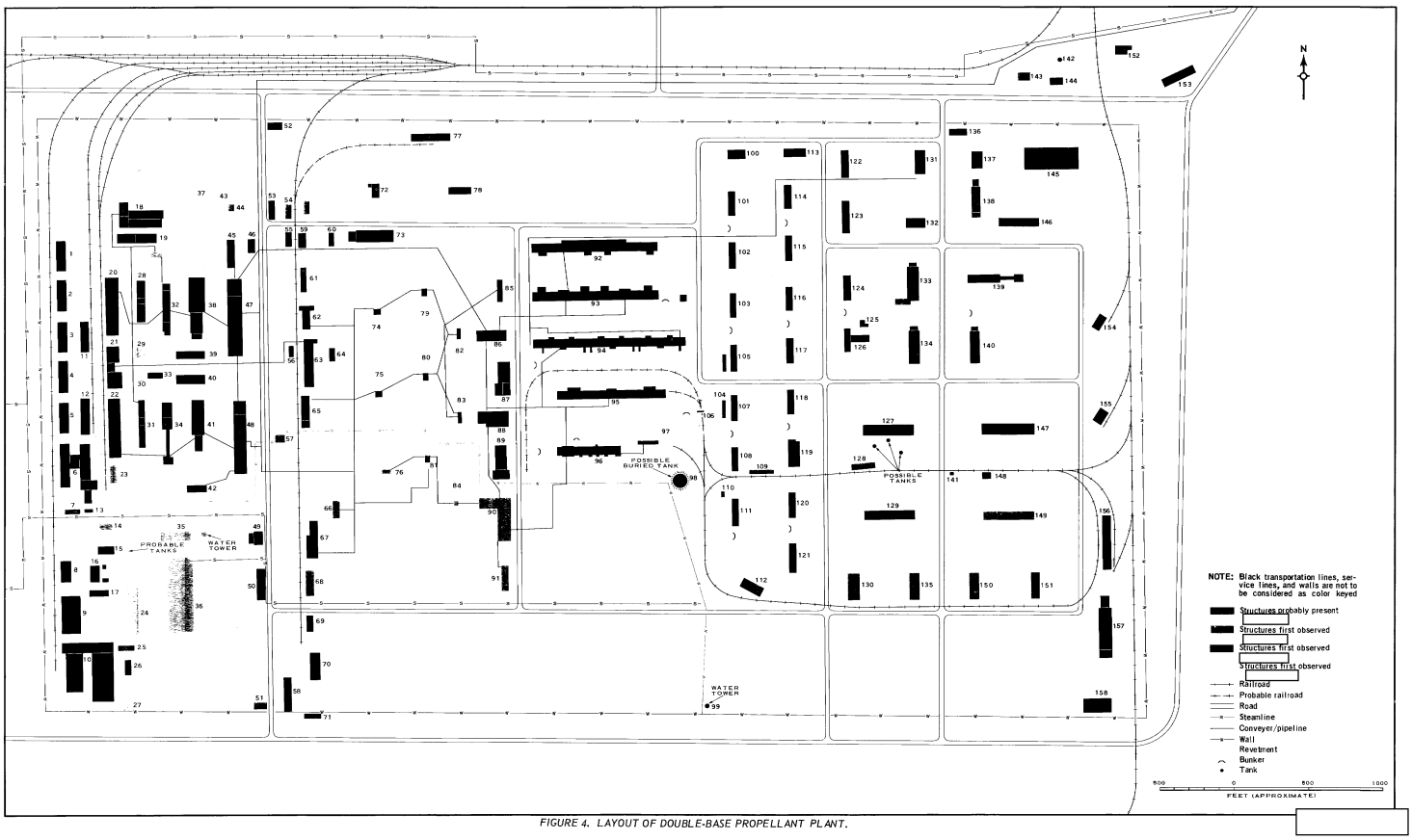


FIGURE 4. LAYOUT OF DOUBLE-BASE PROPELLANT PLANT.

Table 1. Data on Structures in Double-Base Propellant Plant (item numbers are keyed to Figure 4)

Item	Interpreted Function	Dimensions (ft)* Length	Width	Height	Roof Cover (sq ft)	Present or First Observed**	Explanatory Notes
1	Probably cellulose storage						
2	Probably cellulose storage						
3	Probably cellulose storage						
4	Probably cellulose storage						
5	Probably cellulose storage						
6	Cellulose processing						
7	U/I						This item and item 13 may be objects in open storage. Truss and overhead piping limit interpretation.
8	Shop/storage						
9	Shop/fabrication						
10	Fabrication						Stack suggests heat treatment may be part of function of bldg.
11	Probably cellulose storage						
12	Probably cellulose storage						
13	U/I						See note for item 7.
14	U/I						
15	Possibly acid processing						Dimensions overall; bldg has small tower section and low section on east side. Four probable tanks are short distance east of bldg. The 2 small bldgs immediately east are [redacted] and 30 by 50 ft.
16	Possibly acid processing						
17	Possibly acid processing						
18	Possibly cellulose nitration						Complex multilevel bldg connected by large-diameter overhead pipelines to both cellulose processing lines. Probably part of item 15.
19	Cellulose processing						
20	Nitrocellulose processing						
21	Nitrocellulose processing						
22	Nitrocellulose processing						
23	Possibly nitrocellulose processing						May have been present in 1963.
24	Fabrication						
25	Support/shop						
26	Support/shop						
27	Gatehouse/guardhouse						May have been present in 1962.
28	Nitrocellulose processing						Has [redacted] section near center of bldg.
29	Reagent supply/recovery						Facility consists of bldg and 4 tanks.
30	U/I						
31	Nitrocellulose processing						Has high center section.
32	Nitrocellulose processing						Has 2 high sections, one at end and one near end of structure.
33	Possibly reagent recovery						Facility consists of bldg and adjacent possible chemical processing equipment.
34	Nitrocellulose processing						Has 2 hi gh sections; roof cover is approx.
35	Engineering/administration						
36	Fabrication/assembly						In early stage of construction. [redacted] Dimensions given are for main bldg; low section on north end measures [redacted]
37	Possibly acid recovery						Probably associated with item 43.
38	Nitrocellulose processing						Has high section on south end.
39	Nitrocellulose processing						
40	Nitrocellulose processing						
41	Nitrocellulose processing						
42	Nitrocellulose processing						
43	Possibly acid recovery						Probably associated with item 37.
44	U/I						
45	Nitrocellulose processing						
46	Nitrocellulose processing						
47	Nitrocellulose processing						Has [redacted] section on north end.
48	Nitrocellulose processing						High multilevel structure.
49	Possibly administration/housing						
50	Possibly administration/engineering						
51	Gatehouse/guardhouse						
52	Gatehouse/guardhouse						
53	U/I						
54	U/I						
55	U/I						
56	Possibly nitrocellulose processing						
57	U/I						
58	Probably storage						
59	U/I						
60	U/I						
61	Possibly nitrocellulose processing						
62	Possibly nitrocellulose processing						
63	Possibly nitrocellulose processing						Has 25- by 20-ft projection on NE corner. Connected to item 64 by overhead pipeline.
64	Possibly glycerine processing						
65	Possibly nitrocellulose processing						
66	Possibly glycerine processing						Has 5 vertical columns or tanks in row along east side.
67	Nitroglycerine/nitrocellulose processing						
68	U/I						
69	Possibly storage						
70	Possibly storage						
71	Possibly storage						Shed may have been razed.
72	Support/storage						
73	Possibly nitrocellulose processing						
74	Glycerine nitration						
75	Glycerine nitration						
76	Glycerine nitration						Items 76, 81, 84, and 90 may be involved in nitration and processing of substance other than glycerine. Building may be rail served; it could then be interpreted as shipping/receiving facility.
77	Possible laboratory						
78	Possibly support/storage						
79	Nitroglycerine processing						
80	Nitroglycerine processing						
81	Nitroglycerine processing						
82	Nitroglycerine processing						
83	Nitroglycerine processing						
84	Nitroglycerine processing						
85	Nitroglycerine/double-base processing						
86	Nitroglycerine/double-base processing						
87	Nitroglycerine/double-base processing						
88	Nitroglycerine/double-base processing						
89	Nitroglycerine/double-base processing						
90	Nitroglycerine processing						Very large structure. Smaller wing is higher. May be functionally related to items 96 and 97, possible casting facilities.
91	Support/storage						Probably support for item 90.
92	Double-base processing						Dimensions do not include several open rectangular projections along length of bldg.
93	Double-base processing						Small bldg east of item 93 is [redacted] 40 ft. Dimensions do not include several open rectangular projections along length of bldg.
94	Double-base processing						Dimensions do not include several open rectangular projections along length of bldg.
95	Double-base processing						Dimensions do not include several open rectangular projections along length of bldg.
96	Possibly casting						U/C in [redacted] possibly complete by late 1964. Similar to several others in USSR. See item 97.
97	Possibly casting						Part of item 96. Heavily revetted. Rail served. Possibly complete in late 1964, late 1965, or early-to-mid 1966.
98	Possible buried tank						Diameter includes earth covering.
99	Water tower						
100	Double-base processing/storage						
101	Double-base processing						
102	Double-base processing						
103	Double-base processing						
104	Support						
105	Double-base processing						
106	Support						
107	Double-base processing						
108	Double-base processing						
109	Freight receiving/shipping						
110	Support						
111	Double-base processing						
112	Possibly motor storage/curing/assembly						Probably rail served.
113	Double-base processing/storage						
114	Double-base processing						
115	Double-base processing						
116	Double-base processing						
117	Double-base processing						
118	Double-base processing						
119	Double-base processing						Bldg irregular in floor plan; dimensions overall. Has at least 1 stack from which smoke/steam has been seen rising on several photo coverages.
120	Double-base processing						
121	Double-base processing						
122	Double-base processing/storage						
123	Double-base processing/storage						
124	Double-base processing						
125	Double-base processing						Possibly present in [redacted]
126	Double-base processing						U/C in [redacted]
127	Possibly motor storage/curing/assembly						
128	Freight handling						
129	Possibly motor storage/curing/assembly						U/C in [redacted]
130	Possibly motor storage/curing/assembly						Probably rail served.
131	Double-base processing/storage						
132	Double-base processing/storage						
133	Double-base processing/storage						SW wing added in 1964.
134	Double-base processing/storage						
135	Possibly motor storage/curing/assembly						Probably rail served.
136	Support/possible administration						
137	Support/administration						
138	Support/double-base processing						Bldg may be slightly irregular in floor plan; dimensions overall.
139	Double-base processing						
140	Double-base processing						Has 50- by 20-ft section on north end.
141	Support						May have been present in [redacted]
142	Tank						
143	Administration/support						
144	Administration/support						
145	Packing/shipping						Probably rail served.
146	Support/double-base processing						Possible product packaging facility.
147	Possibly motor storage/curing/assembly						
148	Support						Possible bldg.
149	Possibly motor storage/curing/assembly						
150	Possibly motor storage/curing/assembly						Rail served.
151	Possibly motor storage/curing/assembly						Rail served.
152	Administration/support						
153	Administration/housing						
154	Storage						Rail served.
155	Storage						Rail served.
156	Packing/shipping						Rail served. Has high center section. May also have assembly function.
157	Packing/shipping						Probably rail served. Has high center section. Dimensions are overall. May also have assembly function.
158	Packing/shipping						Still U/C in [redacted] May also have assembly function. Small bldg immediately west is 25 by 20 ft.

*Horizontal dimensions are accurate to within [redacted] whichever is greater. Heights are accurate to within ± 10 ft.

**Completion dates are not stated, due to both time gaps and quality limitations of the photographic coverage. Structures generally may be considered apparently complete in the year given unless otherwise stated in the explanatory notes or annotated on the figures. Photography of [redacted] the best early coverage, has been used as the chronology base; many structures antedate this coverage. See text for the status of facilities during 1960 and 1961.

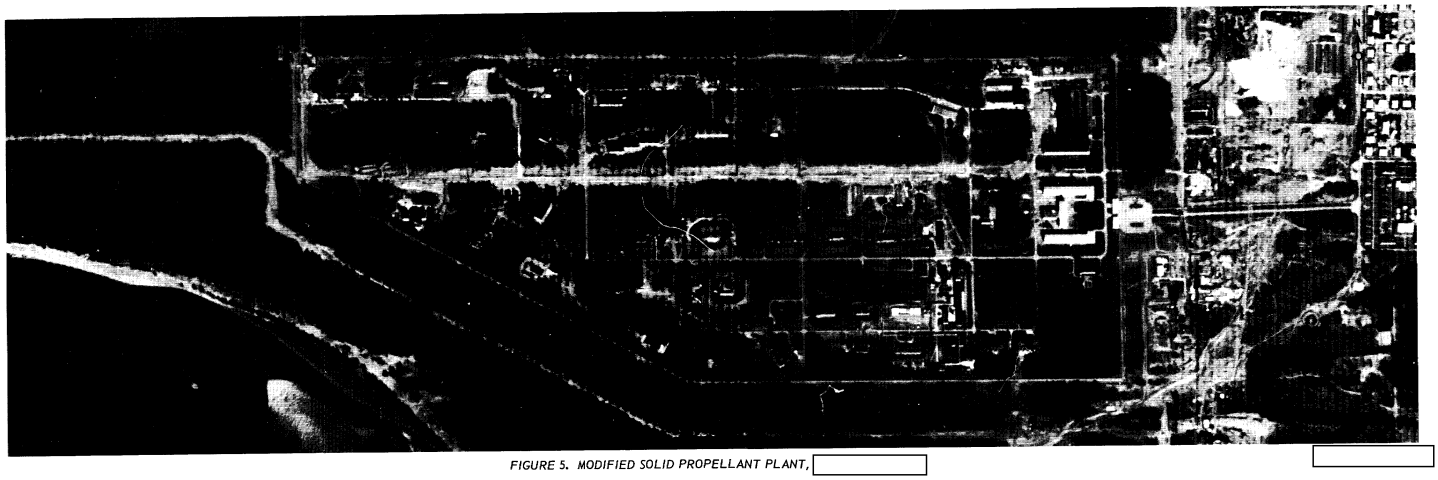


FIGURE 5. MODIFIED SOLID PROPELLANT PLANT,

Table 2. Data on Structures in Modified Solid Propellant Plant (item numbers are keyed to Figure 6)

Item	Interpreted Function	Dimensions (ft)* Length	Width	Height	Roof Cover (sq ft)	Probably Present or First Observed**	Explanatory Notes
1	U/I						May be check station for materiel entering plant from double-base plant. Bldg is probably pipeline served.
2	Tank						Semiburied.
3	U/I						
4	U/I						
5	Storage						Revetted.
6	Storage						Revetted.
7	Storage						
8	Possible pump/valve house						
9	Propellant processing						Revetment was U/C in [redacted]. Bldg may be involved in propellant mixing, casting, or curing.
10	Propellant processing						Revetment was U/C in [redacted]. Bldg may be involved in propellant mixing, casting, or curing.
11	Propellant processing						Heavily revetted. Located adjacent to facilities U/C in [redacted]. May be involved in propellant mixing, casting, or curing.
12	U/I						This bldg and the tank base immediately north were U/C in [redacted].
13	Propellant processing						Revetted possible horizontal tank or bldg.
14	Propellant processing						Revetted possible horizontal tank or bldg.
15	Propellant processing						Revetted or situated in cutback.
16	Propellant processing						Revetted or situated in cutback.
17	U/I						
18	Possibly motor handling						Height of bldg suggests it is used for core insertion/removal or other hardware handling functions.
19	Propellant processing						Possible casting/curing facility has high section at one end. May contain 3 pits/silos U/C in [redacted].
20	U/I						
21	Propellant processing						
22	Possibly packing/shipping						Has shed 120 by 25 ft on north side. Size and height of bldg suggest stated function. May be rail served. Is partially revetted. U/C when first seen.
23	Possibly temperature-conditioning/motor storage						See similar structures in east end of test facility.
24	Propellant processing						May be casting/curing facility. Is possibly rail served. Has unusual structure immediately east of revetment entrance.
25	U/I						
26	Propellant processing						Probably complex structure of which only 1 element is included in stated length and width. May be rail served.
27	Possibly shipping/receiving						
28	Possibly casting						Revetted. Possibly rail served. Entrance is approx [redacted] at ground level and approx [redacted]
29	Possibly casting						Possibly rail served. Height given is questionable; the 2-level building may be approx twice as high as stated.
30	U/I						Appears to be connected with possible temperature-conditioning/motor storage facility, item 23. Rail served.
31	Propellant processing						
32	Propellant processing						The 2 small structures NE of revetment are [redacted] and [redacted]. They probably are entrances to building under revetment.
33	Propellant processing						
34	Possibly fluid processing						Has row of possible columns or slender vertical tanks along west side. Was U/C in [redacted].
35	Propellant processing						
36	Propellant processing						
37	Propellant processing						
38	U/I						
39	Propellant processing						
40	Propellant processing						
41	Propellant processing						
42	U/I						Possibly U/C in late 1965.
43	U/I						
44	U/I						
45	U/I						
46	U/I						Bldg has remained incomplete since [redacted]. Bldg is served by 1 or more overhead pipelines that link it with items 40, 53, and 57, possibly with other structures.
47	Propellant processing						
48	Laboratory/office						
49	U/I						
50	Processing						Has high section on north end.
51	Processing						

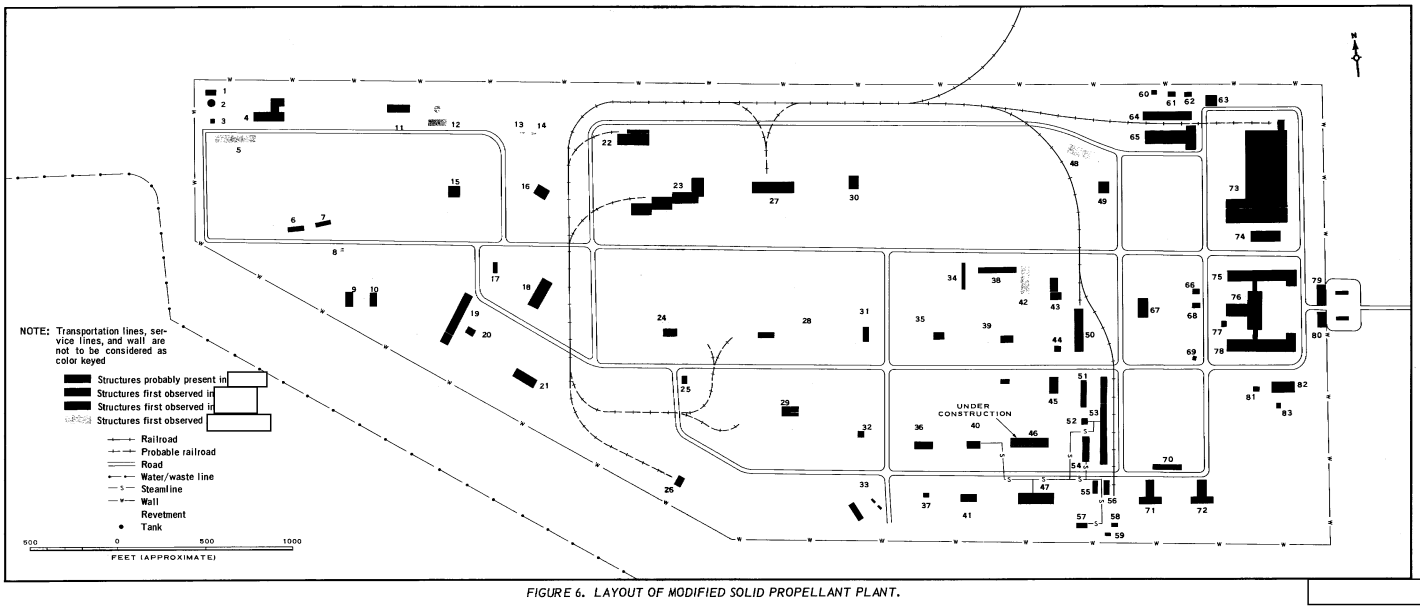


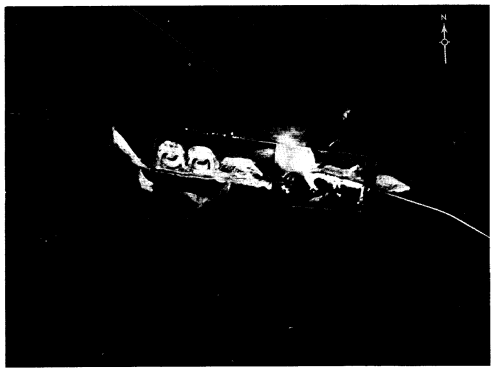
FIGURE 6. LAYOUT OF MODIFIED SOLID PROPELLANT PLANT.

Table 2. (Continued)

Item	Interpreted Function	Dimensions (ft)* Length	Width	Height	Roof Cover (sq ft)	Probably Present or First Observed**	Explanatory Notes
52	Processing						High section is [ ] Two-level bldg.
53	Processing						
54	Processing						
55	U/I						Items 55-59 are probably related to the probable propellants processing carried out in this part of plant.
56	U/I						
57	U/I						
58	U/I						
59	U/I						
60	Possibly storage						Items 60-63 may be storage/distribution facilities for motor/propellant components.
61	Possibly storage						
62	Possibly storage						
63	Possibly storage						
64	Hardware/fabrication/assembly						This bldg and item 65 may be joined, to form 1 complex structure.
65	Hardware/fabrication/assembly						Cross of "T" is [ ] See item 64.
66	U/I						
67	U/I						
68	U/I						
69	U/I						
70	U/I						
71	Possible test laboratory						Items 71 and 72 may be involved in quality-control testing of propellants and propellant ingredients. South sides of both items appear to consist of 4 cell-like projections.
72	Possible test laboratory						
73	Case assembly/fabrication						U/C in [ ] Has possible crane yard at north end which may be rail served.
74	Office for item 73						
75	Administration/engineering						Possibly includes laboratories.
76	Administration/engineering						West wing U/C in [ ] rest of building apparently complete.
77	Support						
78	Administration/engineering						Possibly includes laboratories.
79	Administration						
80	Administration						
81	Support						
82	Support						
83	Possibly offices						

*Horizontal dimensions are accurate to within [ ] whichever is greater. Heights are accurate to within ±10 ft.

**Completion dates are not stated, due to both time gaps and quality limitations of the photographic coverage. Structures generally may be considered apparently complete in the year given unless otherwise stated in the explanatory notes or annotated on the figures. Photography of [ ] the best early coverage, has been used as the chronology base; many structures antedate this coverage. See text for the status of facilities during 1960 and 1961.



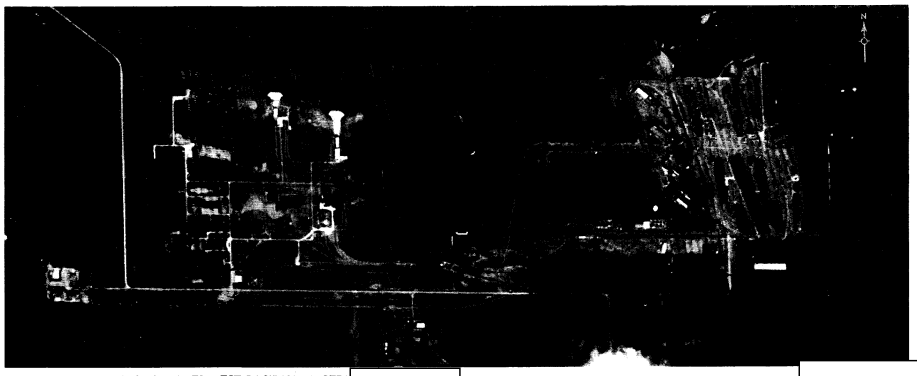


FIGURE 7. TEST FACILITY AND ISOLATED TEST POSITION (INSET).

Table 3. Data on Structures in Test Facility and Isolated Test Position (item numbers are keyed to Figure 8)

Item	Interpreted Function	Dimensions (ft)* Length	Width	Height	Roof Cover (sq ft)	Probably Present or First Observed**	Explanatory Notes
TEST FACILITY							
1	Small test cell						See Figure 9. Apparently still U/C in [redacted] deflector probably completed in 1963. See Figure 10. Deflector present in 1962.
2	Large test cell						
3	Control/support						
4	Possibly post-fire checkout						
5	Checkout/assembly						H-shaped bldg; see Figure 11. Height is for highest section of this multilevel bldg.
6	Components storage/assembly						
7	Components storage/assembly						
8	Shop/support						
9	Shop/support						
10	Storage						Revetted.
11	Shop/support						
12	Shop/test/subassembly						Tank immediately west of item 12 is 80 ft in diameter.
13	Shop/test/subassembly						
14	Shop/test/subassembly						
15	Shop/test/subassembly						Tower-like structure approx [redacted]
16	U/I						Large earth-covered tank immediately north of bldg is 80 ft in diameter.
17	Storage						Still incomplete. [redacted]
18	Possibly temperature conditioning						Could also be interpreted as solid rocket motor storage/curing facility.
19	Shop						This structure could be used for pulling cores.
20	Possibly temperature conditioning						Could also be interpreted as solid rocket motor storage/curing facility. The 3 northernmost segments were present in 1963. May be identical to item 18.
21	Administration/storage/shop						
22	Storage						
23	Storage						Still U/C in [redacted]
24	Possibly temperature conditioning						Could also be interpreted as solid rocket motor storage/curing facility. Northernmost segment U/C in [redacted] Facility may be identical to item 25.
25	Possibly temperature conditioning						Could also be interpreted as solid rocket motor storage/curing facility. Northernmost segment present in 1963.
26	Storage						
27	Storage/shop						
28	Storage						Still U/C, [redacted]
29	Storage						
30	Storage/shop						High section on west end is 66 by [redacted]
31	Storage/shop						
32	Shop						
33	Storage/shop						U/C in [redacted]
34	Components storage						Separate security suggests storage of sensitive components.
35	Components storage						Bldg and adjacent structure may or may not be part of test facility. Separate security suggests storage of sensitive components.
36	U/I						Continuing construction activity evident in [redacted] Separate security suggests storage of sensitive components.
37	U/I						Bldg is steamline served. U/C in [redacted]
38	U/I						This structure and others in same separately secured area are common to several other solid rocket motor test complexes in USSR. Storage and assembly of igniter components is possible function for structure.
39	Storage (revetted)						
40	U/I						Possible tank west of item 40 is approx [redacted] ft in diameter.
ISOLATED TEST POSITION							
1	Test position revetment						Easternmost segment, which probably contains a control building, was first observed in 1964. South and west segments were present in 1962.
2	Test position/bldg						Possible smoke cloud emanating from this test position/bldg was seen on [redacted] photography.
3	Control/support						

*Horizontal dimensions are accurate to within ±10 ft or 5%, whichever is greater. Heights are accurate to within ±10 ft.

**Completion dates are not stated, due to both time gaps and quality limitations of the photographic coverage. Structures generally may be considered apparently complete in the year given unless otherwise stated in the explanatory notes or annotated on the figures. Photography of [redacted] the best early coverage, has been used as the chronology base; many structures antedate this coverage. See text for the status of facilities during 1960 and 1961.

Note: The several small buildings shown in Figure 8 are too small to measure on available photography.

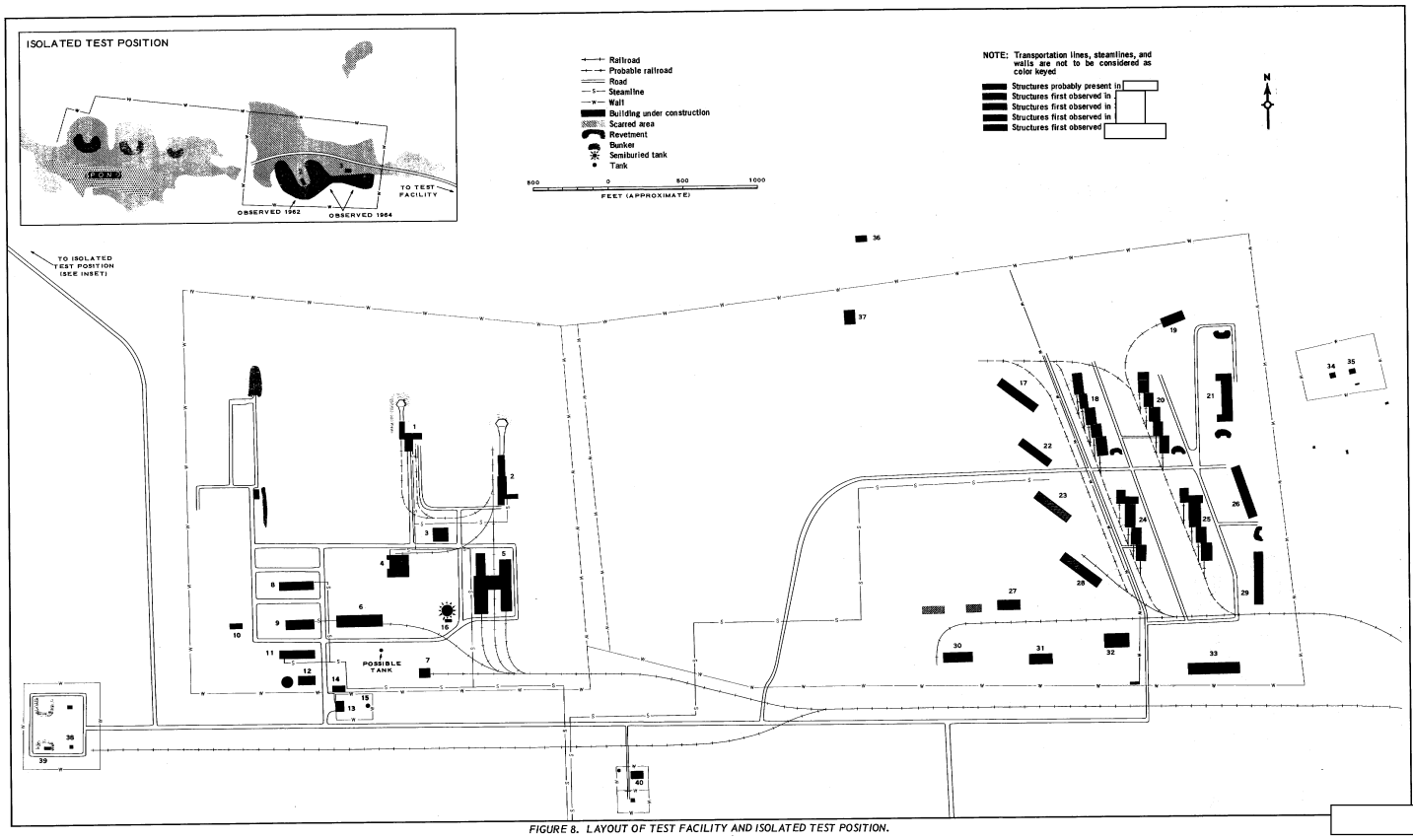


FIGURE 8. LAYOUT OF TEST FACILITY AND ISOLATED TEST POSITION.

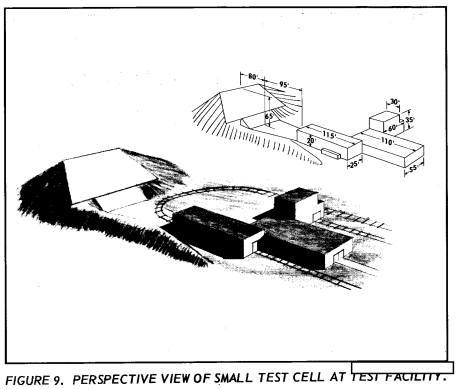


FIGURE 9. PERSPECTIVE VIEW OF SMALL TEST CELL AT TEST FACILITY.

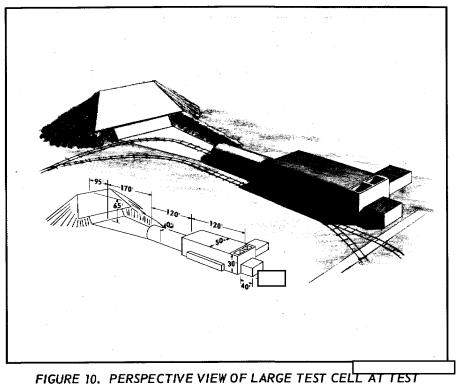


FIGURE 10. PERSPECTIVE VIEW OF LARGE TEST CELL AT TEST FACILITY.

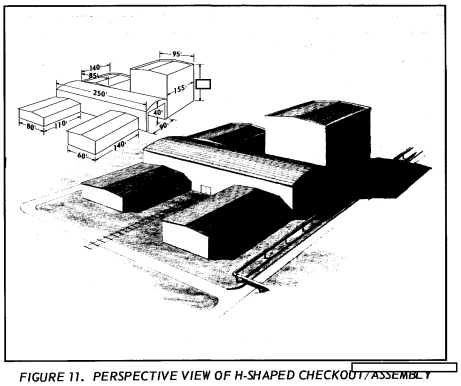


FIGURE 11. PERSPECTIVE VIEW OF H-SHAPED CHECKOUT/ASSEMBLY BUILDING AT TEST FACILITY.

REFERENCES

PHOTOGRAPHY

MAPS OR CHARTS

SAC series, scale 1:200,000

REQUIREMENT

CIA. C-DI5-82,973

NPIC PROJECT

11212/66 (partial answer)

TOP SECRET
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